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1960

### Upland Game Restoration Project

Melvin O. Steen

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State: Nebraska  
Project: W-17-D-13  
Date: July 1960

FINAL REPORT

As Required By

Federal Aid in Wildlife Restoration Act

Title of Project: Upland Game Restoration Project

Location : Statewide

Supervisors : Melvin O. Steen, Director  
Willard R. Barbee, Chief, Land Management Division  
C. Phillip Agee, Federal Aid Coordinator

Project Leader : Clarence E. Newton

Assistant Project Leader: Dale R. Bree (July 1, 1959 to January 10, 1960)  
Delvin M. Whiteley (January 1, 1960 to June 30, 1960)  
Chester A. McClain (March 1, 1960 to June 30, 1960)

District Supervisors

District I : Robert L. Schick  
District II : Gerald R. Chaffin  
District III : James J. Hubert  
District IV : Chester A. McClain (July 1, 1959 to February 29, 1960)  
: Robert D. Lutes (July 1, 1960 to \_\_\_\_\_)  
District V : Delvin M. Whiteley (July 1, 1959 to December 31, 1959)  
: Vernon C. Feye (June 1, 1960 to June 30, 1960)

Personnel Changes : Bree transferred to the Parks Division. Whiteley was promoted to assistant project leader. A second assistant project leader position was created and McClain was promoted to this position.

Feye was hired to replace Whiteley. Lutes was hired to replace McClain effective as of July 1, 1960.

### Introduction

It is the objective of the project to stabilize the populations of various species of small, upland game to the extent that populations will be maintained at harvestable levels in periods when those populations tend to slump.

It is recognized that in Nebraska nearly all of the small, upland game is produced on private lands. Therefore, the project is designed to provide assistance to the landowners who may wish to improve the game habitat on their lands.

### Project History

In the early years of the project the personnel consisted of a project leader, an assistant project leader and several local field crews. The crew foreman, working in his own area, selected sites to be developed and executed an agreement with the cooperating landowner.

The field crew then accomplished the ground preparation, fence construction, tree planting and the necessary cultivation for one or two growing seasons. The system was not completely satisfactory, however, as many cooperators allowed their developments to deteriorate after project personnel had completed the establishment phase.

Operations were changed by gradual steps, through a period of years, to place the work of the establishment phase on the cooperator. The change was made in an attempt to assure the selection of cooperators who had a real interest in the success of a development, and interest indicated by a willingness to accept the workload involved.

### Present Operational Plan

The project is now staffed simply with the project leader, assistant project leaders and the five district supervisors. The district supervisor, in response to requests from a prospective cooperator, will visit the cooperators property to accomplish the following:

1. Select or approve a prospective development site.
2. Advise the cooperator of his obligations.
3. Execute an agreement with the cooperator.
4. Establish the development plan.
5. Allocate the materials which are to be issued for developing the site.

The project leader and assistant project leaders attend to administrative duties, provide guidance to district men and assist in field work as time permits.

Materials issued to cooperators for site development presently consist of any or all of the following:

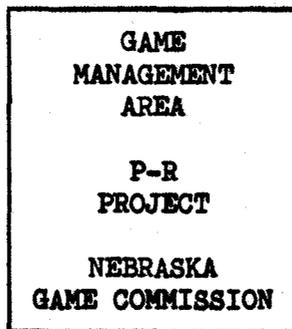
1. Nursery stock of trees and shrubs.
2. Grass or herbaceous seed.

3. Fencing material.

4. A metal sign to designate the cooperators property as a game management area.

The signs are issued by the district supervisor directly to the cooperator. Seed is handled in the same manner. Fencing material is delivered to the cooperator by Game Commission labor force. Nursery stock is shipped direct from the commercial nursery to the cooperators.

The metal sign is worded as follows:



(Size 12" x 15")

#### Trends of the Project

With the thought that winterkill was the limiting factor for pheasant populations in Nebraska, this project has emphasized the development of woody, winter shelter areas. In the most recent years there has been a trend with the research personnel of the Game Division to suspect the lack of satisfactory nesting cover as the limiting factor in the diversified farming area. The Game Division's investigations have progressed far enough to demonstrate an importance for undisturbed nesting cover.

In recognition this project has relaxed its demand that prospective cooperators provide development sites which meet the size and shape requirements of a winter shelter area. It is felt that smaller sites in larger numbers will contribute to the nesting picture. Also many of the larger developments now take the form of linear developments of field borders and may extend through the nesting territories of more pheasants.

Winter shelter areas are still encouraged, but the new designs fit into the plans of more farms.

The project experienced a substantial increase in the cost of packing and shipping nursery stock in the 1960 planting season. It is possible that we will be forced to return to receiving the stock at the nursery and delivering to the cooperator by force account.

## Activities of the Report Period

### Selection of Development Sites

Selection of development sites with the accompanying planning work and cooperator indoctrination requires the largest share of project personnel's time. This activity continues generally throughout the year with interruptions only for brief periods of peak activity in other work.

It would be ideal to have site selection work completed in the summer months so that cooperators would have the fall as well as the early spring to complete ground preparations on the sites. However, it is seldom that sufficient prospective cooperators apply in the summer months to allow the project to allocate the total quota of nursery stock at the desired time.

### Preparation of Development Sites

Project personnel recommend specific ground preparation practices for the individual sites. Execution then becomes the responsibility of the cooperator.

There is a continuing need for spot checks to encourage certain cooperators to accomplish the ground preparation work at the appropriate time.

### Fencing Development Sites

Project personnel allocate fencing materials for the individual sites where fencing is required. After the Game Commission crew delivers the materials to the property, fence construction becomes the responsibility of the cooperator.

### Distribution of Nursery Stock

Distribution of nursery stock is scheduled by project personnel. Delivery is accomplished through the mail direct from the nursery to the cooperator.

### Maintenance of Development Sites

Prescribed maintenance for the individual sites varies from site to site with variations in soil type and topography. Under Nebraskan conditions in general, it is best to clean-cultivate a young tree planting site. However, soil erosion problems can result if clean cultivation is practiced on light soils or some of the moderate and steeper slopes.

Here also we find a continuing need for spot checks to encourage the cooperator to maintain cultivation where appropriate.

Recent and current experiments with pre-emergent herbicides continue to show encouraging results. It may be possible to maintain small trees free of weeds for a period of up to three years by a single application of certain commercial products. It is probable that the herbicides can be applied only to the tree rows and to a narrow band on each side leaving the majority of the area between the rows to be tended by mechanical means. Experiments are largely incomplete at this time. One publication on the practice is included in the appendix. It is the Extension Service's Forestry circular entitled "Chemical Weed Control in Windbreaks" by Karl Loerch, State Extension Forester.

Survival Checks

Field observations for survival check purposes were scheduled for the habitat developments initiated in 1955 and in 1959.

For the multiple species tree and shrub developments, complete counts were made on all living plants. In the 1955 developments, the number of living plants was compared to the number of plants allocated, both in the original allocation and in all replant operations, to obtain a per cent of survival. The number of living plants was also compared to the original number of plants allocated in 1955 in order to arrive at a per cent of stand obtained. In the 1959 developments, where no replant work had been accomplished, the per cent of survival figure also represents the per cent of stand.

Survival checks were also scheduled for developments which included Multiflora rose only. Because of the large numbers of plants in some rose hedges, a sampling system was used in lieu of a complete count. The system provided per-cent-of-stand data for the 1955 plantings and per-cent-of-survival data for the 1959 plantings. The rose-only checks were confined to Districts III and V where the vast majority of the Multiflora hedges have been planted.

TABLE I  
SURVIVAL CHECK DATA FROM 1959 OBSERVATIONS  
TREE AND SHRUB PLANTINGS, STATE TOTALS

Part I			
Species	1959 Plantings Per Cent Survival	1955 Plantings Per Cent Survival	1955 Plantings Per Cent of Stand
Multiflora rose	55.9	15.0	19.2
Red cedar	40.2	25.8	42.6
Honeysuckle	51.1	42.6	46.3
Russian olive	44.2	22.5	29.4
American plum	58.2	32.4	40.8
Nanking cherry	64.2	35.5	43.4
Sand cherry	60.9	37.8	53.0
Chokecherry	51.7	30.0	38.5
Quailbush	58.5	29.6	38.2
Chinese elm	73.7	38.5	67.8
Ponderosa pine	33.0	11.7	12.5
Black cherry	--	24.8	25.6
Cotoneaster	--	27.8	27.8
Lilac	--	35.9	38.0
Silverberry	--	11.9	21.5
Dwarf ninebark	--	20.8	20.8
Box elder	56.0	--	--
Hansens rose	75.7	--	--
Sweetbrier	56.8	--	--

THOSE PLANTINGS CONSISTING OF MULTIFLORA ROSE ONLY

Part II		
District	1959 Plantings Per Cent Survival	1955 Plantings Per Cent of Stand
III	81.44	58.60
V	81.72	40.81

### Experimental Roses

In recent years small quantities of Hansen's hybrid rose and Sweetbrier (*Rosa eglanteria*) have been used in the project on an experimental basis. The intent is to find a plant which may be used in the establishment of living stock tight fences where Multiflora rose is not adapted. There are very few acceptable sites for the Multiflora in the western two-thirds of the state. The two experimental roses are thought to be more drought resistant and/or more winter hardy.

Field checks have been made to compare characteristics of the three rose plants for evaluation. On each field check the actual per cent of survival was recorded. The average survival percentage was calculated for each species. The results are as follows:

Multiflora.....	67.1 per cent
Hansen's.....	75.7 per cent
Sweetbrier.....	82.5 per cent

To evaluate uniformity of survival (uniformity of stand) the following three classifications were established:

Good Gaps of no more than three plants
Fair Gaps of no more than six plants
Poor Gaps of more than six plants

Consideration here was given to the ease with which a planting may be filled in to make a stock tight fence and continuous game bird cover. For summarization each observation for each species was awarded points according to the classification assigned. The point system is as follows: Good three points, Fair two points, and poor one point. The total number of points for a species represented the raw score for the species. The raw score was then converted to a percentage of the highest possible score which would be the number of observations multiplied by three. Resulting percentages for the three species are as follows:

Multiflora.....	85.4 per cent
Hansen's.....	92.4 per cent
Sweetbrier.....	97.5 per cent

It should be recognized that the lowest possible percentage would be 33.33 per cent.

Average heights were recorded for each field observation on each species. The combined average for each species is as follows:

Multiflora.....	16.31 inches
Hansen's.....	17.65 inches
Sweetbrier.....	22.60 inches

Average heights have been computed from those sites where both species of respective pairs were available for observation. The following table presents comparative average heights for the respective pairs and the number of sites where the respective pairs could be observed.

Comparison of Heights by Pairs of Species

<u>Number of Observations</u>	<u>Multiflora</u>	<u>Hansen's</u>	<u>Sweetbrier</u>
14	15.2 inches	19.1 inches	----
9	20.5 inches	----	24.8 inches
13	----	18.3 inches	21.8 inches

Uniformity of height may be of value in determining what minimum average height will be sufficient to form a stock tight fence. For recording uniformity of height, three classifications were established as follows:

- Good varies by no more than 1/4 the average height
- Fair varies by no more than 1/2 the average height
- Poor varies by more than 1/2 the average height

Points were awarded on a 3, 2 or 1 basis respectively, and the raw score for each species was converted to a percentage of the highest possible score. The resulting respective percentages are as follows:

Multiflora.....	69.0	per cent
Hansen's.....	81.0	per cent
Sweetbrier.....	93.35	per cent

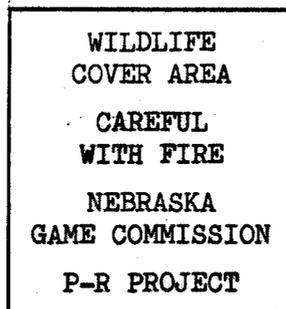
From data obtained in the field checks, Multiflora rose appears to be superior to the other two roses in the nature of the production of new shoots. In the case of Multiflora, the new shoots were confined to the base of the plant increasing the density of the hedge. The other two roses tended to generate some new shoots at points remote from the base of the plant providing an opportunity for the plants to spread out of bounds. By nature of new shoot growth, Multiflora was found to be the most desirable and Sweetbrier the least desirable.

No information was obtained on the structure or shape of the plants. From personal observations the writer has formed the opinion that Hansen's rose and Sweetbrier are much more erect, at least in the first two or three years, than is Multiflora. With Multiflora the canes are more limber and arch to the ground. This shape provides quicker game cover, better protection against soil erosion and a more dense fence structure.

To summarize the results of the field checks, Sweetbrier was found to have the greater advantage when considering survival percentage, uniformity of survival, average heights and uniformity of height while Multiflora was found to be least advantageous. In considering the nature of new shoot growth, Multiflora was found to be the most desirable and Sweetbrier was found to be the least desirable.

### Other Land Improvements

In the initial contact with the cooperator, project personnel sometimes find opportunities to discuss agricultural practices in relation to beneficial or detrimental effects they may have on game birds and mammals. Recommendations made for practice changes are largely confined, of course, to those which may be economically feasible for the cooperator. The objective for this activity is to save and/or improve existing game habitat where possible. The activity is more economical, on an acre-for-acre basis, and can be applied to a much larger acreage than can the development of new cover. Difficulty exists in determining the results of such an activity. As there is no economical way of substantiating data on cover saved or improved, no data has been collected for this report period. Some individual units of cover are posted with roadside signs to encourage preservation. The signs also invite the attention of the public to the importance of preserving such areas. The paperboard signs are worded as follows:



(Size 12" x 15")

Units of cover which the cooperator may wish to preserve and commit completely to wildlife use may be fenced off with materials provided by the project.

### Other Personnel Activities for the Project

Activities within the scope of the project other than those previously described were accomplished for the purpose of making the project more effective.

Contributing continually to the effectiveness of the project is the work of informing prospective cooperators of the services available through the project. This work includes public appearances, radio programs, the preparation of news releases and magazine articles, and close liaison with other conservation agencies. The article that was published during the report period is:

1. Miyoshi, Dick and Whiteley, Delvin M. Chemicals or the Hoe. Nebraska Farmer, March 19, 1960, Volume 102, Number 6 Pages 48 and 49.

The "Youth Project" for 4-H and the Future Farmers of America seems to be very well accepted by both groups. There were over one thousand students enrolled in the projects which are outlined in the first four publications listed below. It is anticipated that the number will increase in the next fiscal year.

Project personnel provide technical assistance as well as materials for developing habitat plantings.

The state leaders of the Boy Scouts of America have been contacted with the intention of making the youth project available to that group. Tentative plans for the publication of Boy Scout manuals and record books are under consideration.

State membership of the F.F.A., 4-H and Boy Scout organizations is approximately 51,000. There exists a considerable potential for increasing the scale of the Up-land Game Restoration Project through these organizations.

Publications for the use of youth organizations are as follows:

- Bree, Dale R. 1959 Wildlife Conservation Program for Nebraska F.F.A. Chapters, Wildlife Habitat. P-R Project W-17-D Publication, Nebraska Game, Forestation and Parks Commission, Lincoln.
- 1959 Record and Requirement Book for F.F.A. Wildlife Conservation Project. P-R Project W-17-D Publication, Nebraska Game, Forestation and Parks Commission, Lincoln.
- 1959 Nebraska 4-H Wildlife Conservation Supplement, Wildlife Habitat Leader's Guide. P-R Project W-17-D Publication, Nebraska Game, Forestation and Parks Commission, Lincoln.
- 1959 Record and Requirement Book for 4-H Wildlife Conservation Project. P-R Project W-17-D Publication, Nebraska Game, Forestation and Parks Commission, Lincoln.

Two other department publications of particular merit, should be mentioned here. They were not produced under Federal Aid Work, and no Federal Aid time was utilized; but project personnel were involved in the development.

- Tische, James M.  
Bree, Dale R. 1959 4-H Club and Youth Manual for Work in Wildlife Conservation and Outdoor Recreation. Nebraska Game, Forestation and Parks Commission, Lincoln.
- 1959 4-H Club and Youth Record Book for Work in Wildlife Conservation and Outdoor Recreation. Nebraska Game, Forestation and Parks Commission, Lincoln.

The second editions of the last two publications have now been printed. They have new covers and new, briefer titles. The titles are now simply "Youth Manual" and "Youth Record Book".

Planting Season Data

<u>Species</u>	<u>New Developments</u>	<u>Replant Work</u>	<u>Total</u>
Multiflora rose	411,275	78,375	489,650
Red cedar	84,450	58,250	142,700
Honeysuckle	17,625	5,975	23,600
Russian olive	16,450	9,725	26,175
Plum	21,463	5,962	27,425
Nanking cherry	12,175	4,800	16,975
Sandcherry	17,288	6,262	23,550
Chokecherry	15,137	7,450	22,587
Three-leaved Sumac	21,500	5,900	27,400
Box elder	6,150	1,350	7,500
Chinese elm	10,325	8,175	18,500
Ponderosa pine	12,900	16,625	29,525
Hansen's rose	21,250	4,475	25,725
Sweetbrier	16,000	775	16,775
<b>TOTAL:</b>	<u>683,988</u>	<u>214,099</u>	<u>898,087</u>
Number of Cooperators	482	374	856
Number of Tree and Shrub Areas	264	312	576
Number of Rose Hedges	250	62	312
Acres of Tree and Shrub Areas	380.7	---	380.7
Rods of Rose Hedge	20,548	3,295	23,843

FENCING DATA

Acres and Types of Cover  
In Tree Planting Development Sites  
Fenced by the Project

	Project Tree and Shrubs	Existing Vegetation	Water Area Enclosed	Total
Acres	323.0	41.5*	27.75	392.25
Rods Constructed	-----	-----	-----	6002

Acres and Types of Cover  
In  
Fence Only Sites

	Existing Vegetation	Water Area Enclosed	Total
Acres	42.8	12	34.8
Rods Constructed	----	--	352

Materials Issued

	Corner Posts	Brace Posts	Steel Posts	Barbed Wire in 80 rd Spools	Smooth wire in feet	Number of Sites
Planting Sites	351	2457	4746	239	9203	74
Fence Only Sites	20	132	269	16½	513	5

\* Includes 1.5 acres which was actually seeded with project materials.

Seed actually purchased included only ten pounds each of Reed Canary grass, Brome grass and Intermediate wheat grass. This seed was applied to two areas totaling 1.5 acres.

Project Cost Accounting

Total number of plants purchased. . . . . 898,087  
Cost of planting stock purchased. . . . . \$ 28,905.00  
Average cost per plant. . . . . \$ .0321  
Cost of distributing planting stock . . . . . \$ 4,280.87  
Average distribution cost per plant . . . . . \$ .0047  
Cost of fencing material purchased. . . . . \$ 6,482.95  
Cost of seed purchased. . . . . \$ 16.00

Submitted:

Name Clarence Newton  
Title Project Leader

Approved by

Game, Forestation and Parks Commission  
By M. J. [Signature]  
Title Director  
Date Aug. 22, 1960